

We claim:

1. A wet wipe comprising a sheet containing from about 80 to 100 dry weight percent cellulose papermaking fibers bonded together with a permanent wet strength agent and from about 50 to about 700 weight percent of a wiping solution, said wet wipe being further characterized by a dry geometric mean tensile strength of about 5000 grams or greater  
5 per 3 inches of width, a wet geometric mean tensile strength of about 1500 grams or greater per 3 inches of width and a wet sheet caliper of about 0.5 millimeter or greater.
2. The wet wipe of claim 1 wherein the sheet contains from about 90 to 100 dry weight percent cellulose fibers.  
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3. The wet wipe of claim 1 wherein the sheet contains from about 95 to 100 dry weight percent cellulose fibers.
4. The wet wipe of claim 1 wherein the wet sheet caliper is about 1.0 millimeter or greater.  
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5. The wet wipe of claim 1 wherein the wet sheet caliper is about 1.2 millimeters or greater.
6. The wet wipe of claim 1 wherein the wet sheet caliper is from about 1.0 to about 2.0  
20 millimeters.
7. The wet wipe of claim 1 having a specific surface volume ratio of about 0.25 or greater.
8. The wet wipe of claim 1 having a specific surface volume ratio of about 0.35 or greater.  
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9. The wet wipe of claim 1 having a specific surface volume ratio of from about 0.45 to about 0.7.
10. The wet wipe of claim 1 having a wet tensile energy absorbed of about 20 gram-  
30 centimeters per square centimeter or greater.
11. The wet wipe of claim 1 having a wet tensile energy absorbed of about 30 gram-centimeters per square centimeter or greater.

12. The wet wipe of claim 1 having a wet tensile energy absorbed of from about 20 to about 50 gram-centimeters per square centimeter or greater.

13. The wet wipe of claim 1 having a wet tensile energy absorbed of about 30 to about 40  
5 gram-centimeters per square centimeter or greater.

14. The wet wipe of claim 1 having a wet geometric mean tear strength of about 120 grams or less.

10 15. The wet wipe of claim 1 having a wet geometric mean tear strength of about 100 grams or less.

16. The wet wipe of claim 1 having a wet geometric mean tear strength of from about 40 to about 120 grams.

15 17. The wet wipe of claim 1 having a wet geometric mean tear strength of from about 40 to about 100 grams.

18. The wet wipe of claim 1 having a wet sheet bulk of about 10 cubic centimeters or  
20 greater per gram.

19. The wet wipe of claim 1 having a wet sheet bulk of from about 10 to about 35 cubic centimeters or greater per gram.

25 20. The wet wipe of claim 1 having a Normalized Dispensing Efficiency of about 70 percent or greater.

21. The wet wipe of claim 1 having a Normalized Dispensing Efficiency of about 80 percent or greater.

30 22. The wet wipe of claim 1 having a vertical absorbent capacity of about 6.0 grams of water or greater per gram of fiber.

23. The wet wipe of claim 1 wherein the sheet containing cellulose fibers comprises two  
35 outer layers and one or more inner layers, wherein the outer layers are primarily softwood fibers.

24. A wet wipe product comprising a stack of perpendicularly-folded wet wipes within a reach-in container, each of said wet wipes comprising a sheet containing from about 80 to 100 dry weight percent cellulose papermaking fibers bonded together with a permanent wet strength agent and from about 50 to about 700 weight percent of a wiping solution, wherein said product has a Dispensing Efficiency of about 70 percent or greater.
25. The wet wipe product of claim 24 wherein the wet wipes are quarter-folded.
26. The wet wipe product of claim 24 wherein the wet wipes are c-folded and quarter-folded.
27. The wet wipe product of claim 24 wherein the wet wipes are z-folded and quarter-folded.
28. The wet wipe product of claim 24 wherein the wet wipes have an unfolded size of about 60 square inches or greater and the stack of folded wet wipes has a footprint of about 50 square inches or less.
29. The wet wipe product of claim 24 wherein the wet wipes have an unfolded size of from about 60 to about 200 square inches and the stack of folded wet wipes has a footprint of from about 15 to about 50 square inches.
30. The wet wipe product of claim 24 wherein the stack of folded wet wipes has a square footprint.
31. The wet wipe product of claim 24 wherein the wet wipes have a dry geometric mean tensile strength of about 5000 grams or greater per 3 inches of width.
32. The wet wipe product of claim 24 wherein the wet wipes have a wet geometric mean tensile strength of about 1500 grams or greater per 3 inches of width.
33. The wet wipe product of claim 24 wherein the wet wipes have a wet sheet caliper of about 0.5 millimeter or greater.

34. The wet wipe product of claim 24 wherein the sheet contains from about 90 to 100 dry weight percent cellulose fibers.
- 5 35. The wet wipe product of claim 24 wherein the sheet contains from about 95 to 100 dry weight percent cellulose fibers.
36. The wet wipe product of claim 24 wherein the wet wipes have a wet sheet caliper of about 1.0 millimeter or greater.
- 10 37. The wet wipe product of claim 24 wherein the wet wipes have a wet sheet caliper of about 1.2 millimeters or greater.
38. The wet wipe product of claim 24 wherein the wet wipes have a wet sheet caliper of from about 1.0 to about 2.0 millimeters.
- 15 39. The wet wipe product of claim 24 wherein the wet wipes have a specific surface volume ratio of about 0.25 or greater.
40. The wet wipe product of claim 24 wherein the wet wipes have a specific surface volume ratio of about 0.35 or greater.
- 20 41. The wet wipe product of claim 24 wherein the wet wipes have a specific surface volume ratio of from about 0.45 to about 0.7.
- 25 42. The wet wipe product of claim 24 wherein the wet wipes have a wet tensile energy absorbed of about 20 gram-centimeters per square centimeter or greater.
43. The wet wipe product of claim 24 wherein the wet wipes have a wet tensile energy absorbed of about 30 gram-centimeters per square centimeter or greater.
- 30 44. The wet wipe product of claim 24 wherein the wet wipes have a wet tensile energy absorbed of from about 20 to about 50 gram-centimeters per square centimeter or greater.

45. The wet wipe product of claim 24 wherein the wet wipes have a wet tensile energy absorbed of about 30 to about 40 gram-centimeters per square centimeter or greater.
- 5 46. The wet wipe product of claim 24 wherein the wet wipes have a wet geometric mean tear strength of about 120 grams or less.
47. The wet wipe product of claim 24 wherein the wet wipes have a wet geometric mean tear strength of about 100 grams or less.
- 10 48. The wet wipe product of claim 24 wherein the wet wipes have a wet geometric mean tear strength of from about 40 to about 120 grams.
49. The wet wipe product of claim 24 wherein the wet wipes have a wet geometric mean tear strength of from about 40 to about 100 grams.
- 15 50. The wet wipe product of claim 24 wherein the wet wipes have a wet sheet bulk of about 10 cubic centimeters or greater per gram.
51. The wet wipe product of claim 24 wherein the wet wipes have a wet sheet bulk of from about 10 to about 35 cubic centimeters or greater per gram.
- 20 52. The wet wipe product of claim 24 having a Normalized Dispensing Efficiency of about 70 percent or greater.
- 25 53. The wet wipe product of claim 24 having a Normalized Dispensing Efficiency of about 80 percent or greater.
54. The wet wipe product of claim 24 wherein the wet wipes have a vertical absorbent capacity of about 6.0 grams of water or greater per gram of fiber.
- 30 55. The wet wipe product of claim 24 wherein the sheet comprises two outer layers and one or more inner layers, wherein the outer layers are primarily softwood fibers.

56. A wet wipe product comprising a stack of perpendicularly-folded highly-textured wet wipes within a reach-in container, each of said wet wipes having a specific surface volume ratio of about 0.25 or greater and containing from about 50 to about 700 weight percent of a wiping solution, wherein said product has a Dispensing Efficiency of about 70 percent or greater.

57. The wet wipe of claim 56 having a specific surface volume ratio of about 0.25 or greater.

58. The wet wipe of claim 56 having a specific surface volume ratio of about 0.35 or greater.

59. The wet wipe of claim 56 having a specific surface volume ratio of from about 0.45 to about 0.7.

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60. A method of making wet wipes on a papermaking machine comprising:

- (a) forming an aqueous suspension of papermaking fibers and about 0.5 dry weight percent (based on the dry weight of the fibers) or more of a permanent wet strength agent;
- (b) depositing the aqueous suspension of fibers onto a moving forming fabric to form a wet web at a machine speed of about 2000 feet per minute or greater;
- (c) partially dewatering the wet web;
- (d) transferring the wet web to a throughdrying fabric and drying the web to substantially conform the web to the surface topography of the throughdrying fabric, wherein the resulting basesheet has a dry geometric mean tensile strength of about 5000 grams or greater per 3 inches of width and a dry sheet bulk of about 10 cubic centimeters or greater per gram; and
- (e) converting the basesheet into wet wipes containing from about 50 to about 700 weight percent of a wiping solution.

61. The method of claim 60 wherein the papermaking fibers are refined with an energy input of about 5 horsepower-days per ton of dry fiber or greater.

62. The method of claim 60 wherein the wet web is deposited onto the forming fabric by a layered headbox.

63. The method of claim 60 wherein the dried web is creped.

64. The method of claim 60 wherein the dried web is not creped.

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65. A method of operating a commercial throughdrying papermaking machine wherein a basesheet suitable for facial tissue, bath tissue and/or paper toweling is produced and converted into facial tissue, bath tissue and/or paper toweling, wherein the same machine is thereafter used to produce a basesheet of papermaking fibers having a dry geometric mean tensile strength of about 5000 grams or greater per 3 inches of width and a dry sheet bulk of about 10 cubic centimeters or greater per gram, said basesheet thereafter being converted into wet wipes.

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